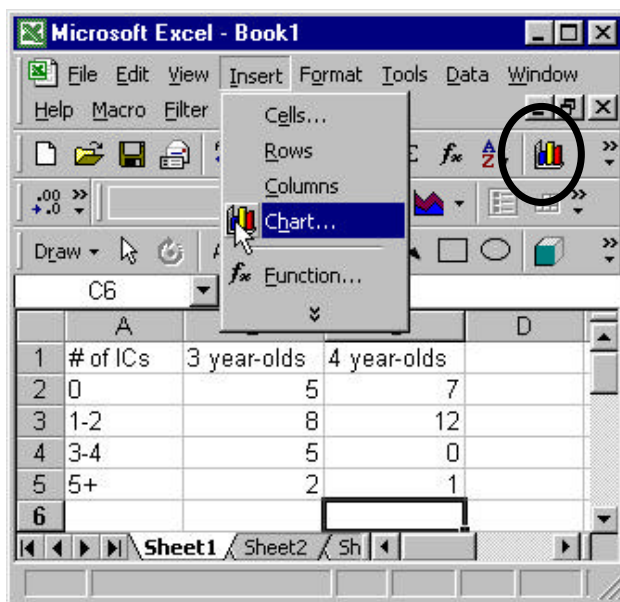


Creating Graphs

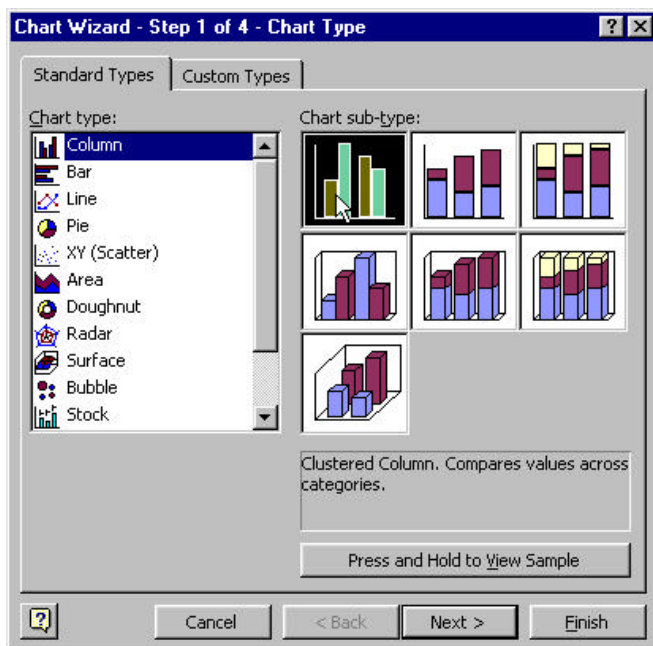
The purpose of this tip sheet is to provide a basic demonstration of how to create graphs with Excel. Excel can generate a wide variety of graphs, but we will use only two as primary examples. Fortunately, many of the steps demonstrated can be generalized to the other types of graphs.

Making a Bar Graph

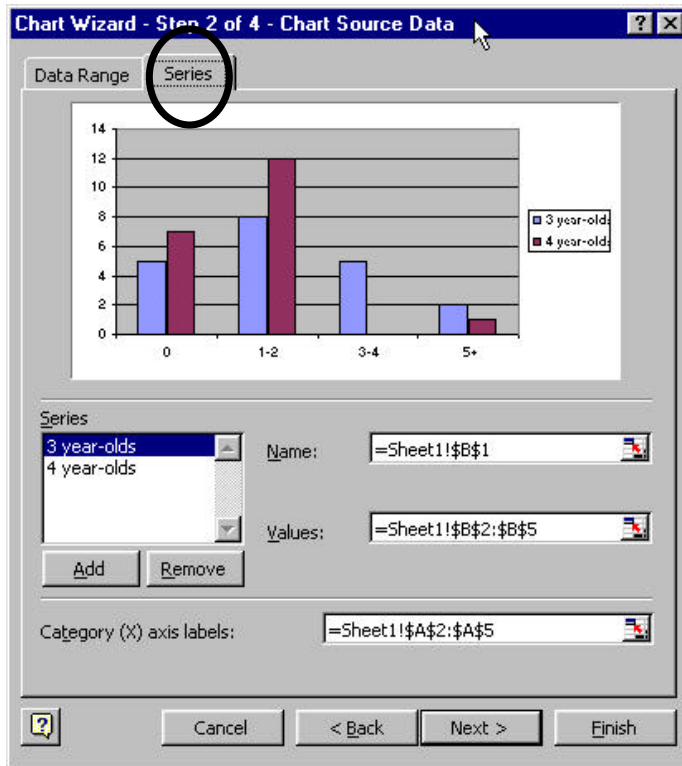
Excel refers to graphical representations as charts, and thus, we will use the terms interchangeably. The first step in creating a chart is to obtain some data. The data listed below are a fictitious representation of a developmental psychologist's findings on the prevalence of imaginary companions in 3- & 4-year-old children. After entering the data, select "Chart" from the Insert menu as shown below or click on the Chart button (circled).



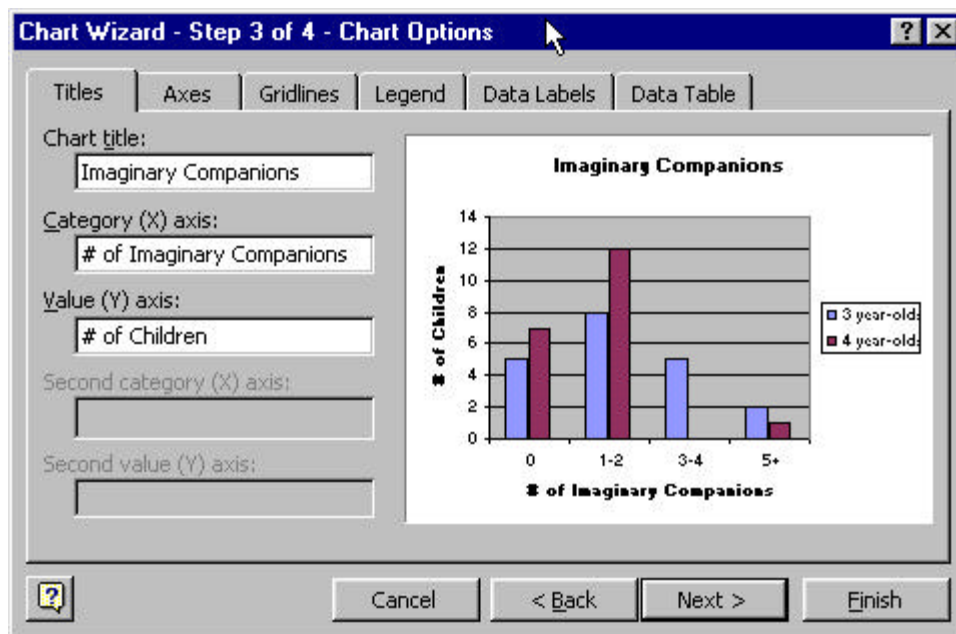
After selecting "Chart" from the Insert menu or clicking the chart button you should see the bottom window. We are going to create a "Column" graph, which is also often referred to as a bar graph. Select "Column" from the "Chart type:" box and then highlight the upper left image in the "Chart sub-type:" box as shown. Once you've done this, click Next >.



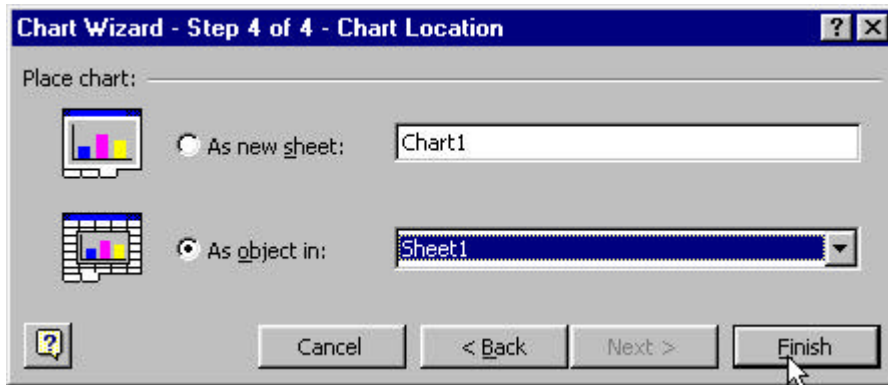
SAMLab Handout #5



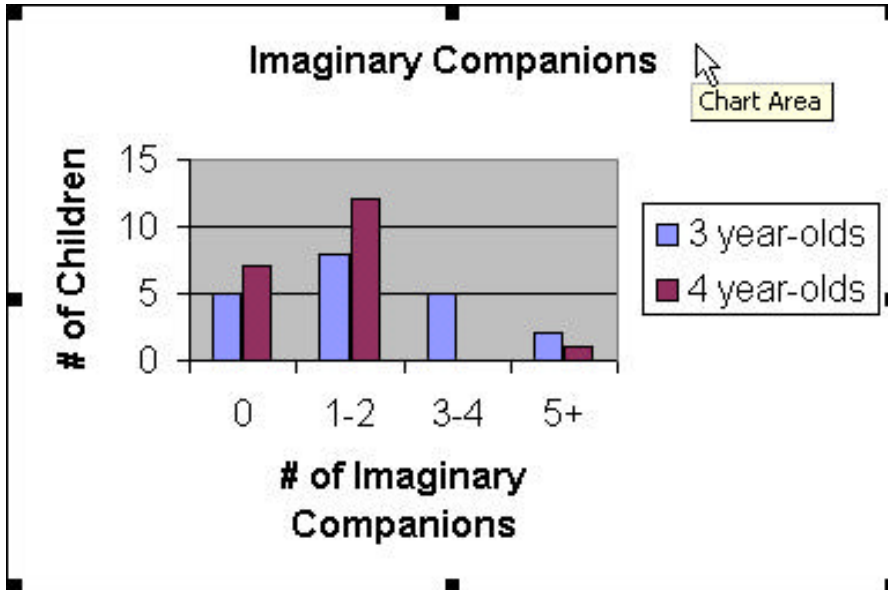
Click on the “Series” tab (circled). Excel should have automatically selected the appropriate data¹, but if it did not, you can always select them yourself by highlighting one of the three fields (“Name”, “Values,” or “Category (X) axis labels”) and selecting the appropriate cells from the spreadsheet. Make sure that you select the correct group in the “Series” box before modifying these fields. When you are satisfied with your input, click Next >, and you should see a window similar to the one below.



In the appropriate fields, enter the title of your chart, your x-axis, and your y-axis. If you like, click on the other tabs to investigate the other changes you can make. When you're ready to move on, click Next >.



If not selected already, click on the radio button next to “As object in:” and make sure the field contains “Sheet 1” or whichever sheet you wish to put the graph in. You can make the chart its own sheet, but you will be unable to see the data in the spreadsheet and the graph simultaneously, which is often useful². Click Finish when you’re ready to continue. You should now have a chart like the one to the left.

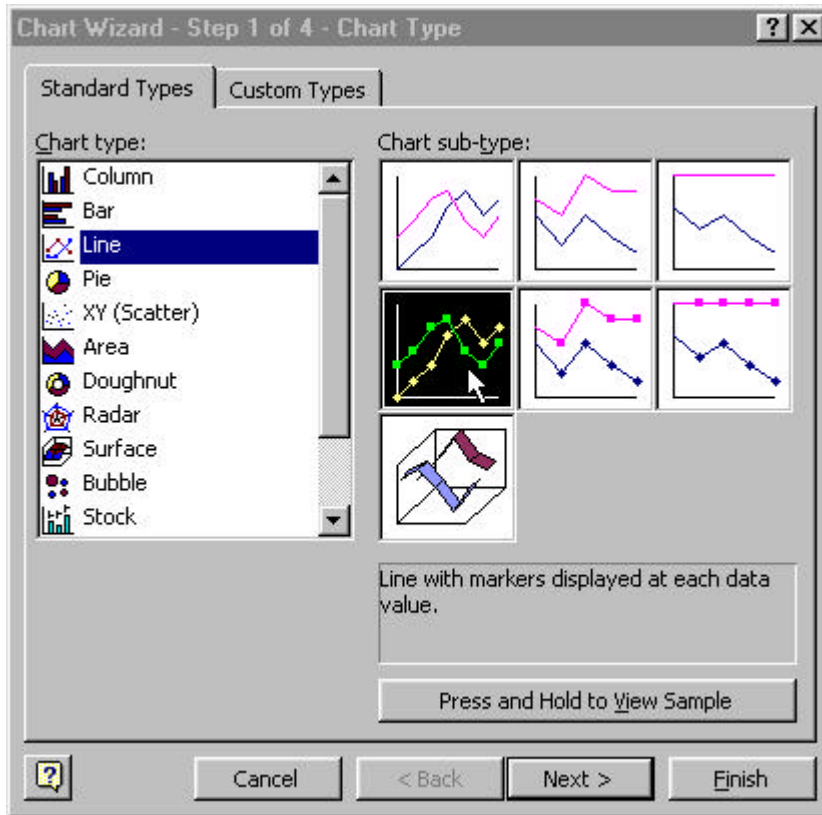


Making a Relative Frequency Polygon

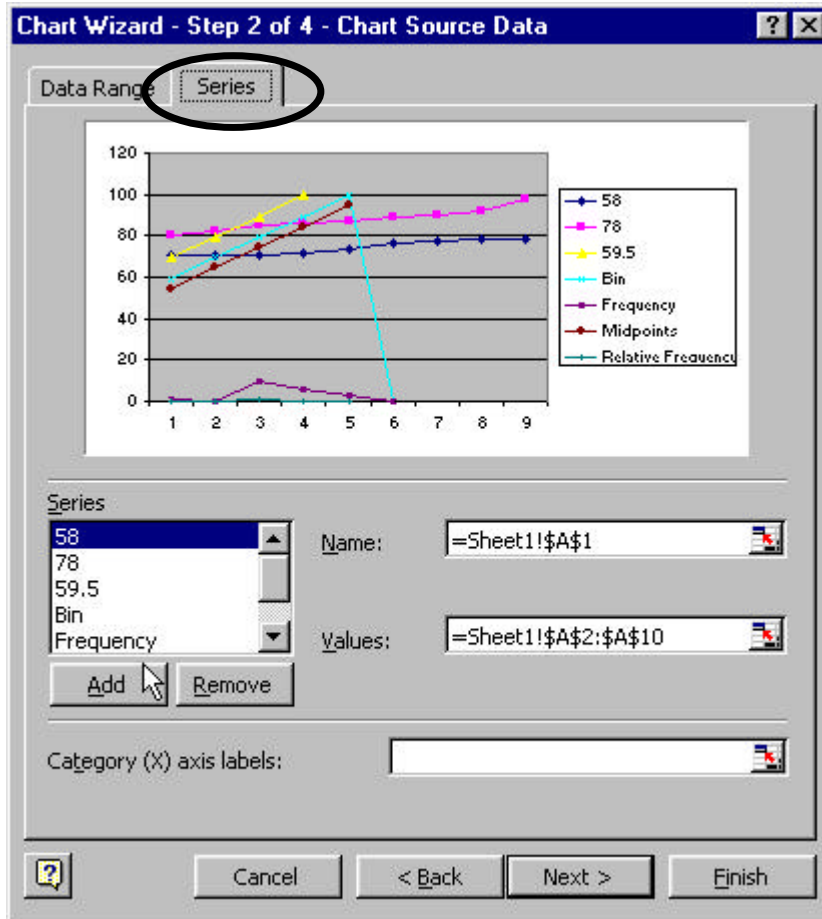
To make a relative frequency polygon, we’ll use the same data from [Tip Sheet #4](#). After entering the data, follow the steps in [Tip Sheet #4](#) to create a histogram (and thus a grouped frequency distribution as well), but do *not* check the box next to “Chart Output.” Next, create a new column of midpoints and relative frequencies. Check the formula bar (circled) for the basic formula for relative frequency ($N=20$ in this example) and *note the extra midpoints and the zeros in the relative frequency column*³. You should end up with something like the spreadsheet below. Note that the original data are condensed into two columns so that the image fits on this page.

	A	B	C	Formula Bar	E	F	G	
					Bin	Frequency	Midpoints	Relative Frequency
1	58	78	59.5					
2	71	80	69.5		59.5	1	44.5	0
3	71	82	79.5		69.5	0	54.5	0.05
4	71	85	89.5		79.5	10	64.5	0
5	72	86	99.5		89.5	6	74.5	0.5
6	74	87			99.5	3	84.5	0.3
7	76	89			More	0	94.5	0.15
8	77	90					104.5	0
9	78	92						
10	78	98						

SAMLab Handout #5

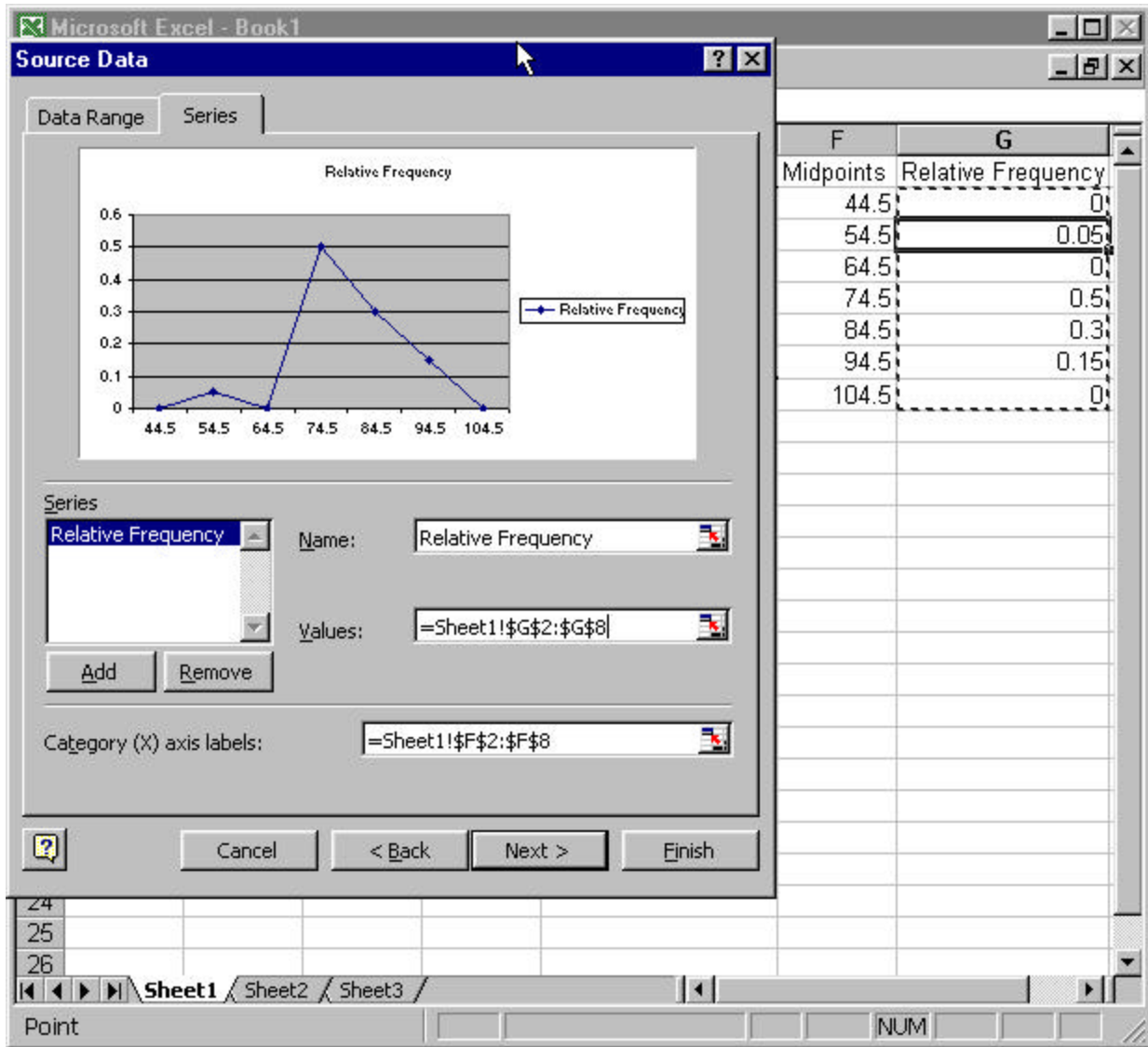


Now select "Chart" from the Insert menu or click the Chart button. Highlight "Line" in the "Chart type" box and select the leftmost image from the middle row of the "Chart sub-type" box as shown to the left. Click Next >.

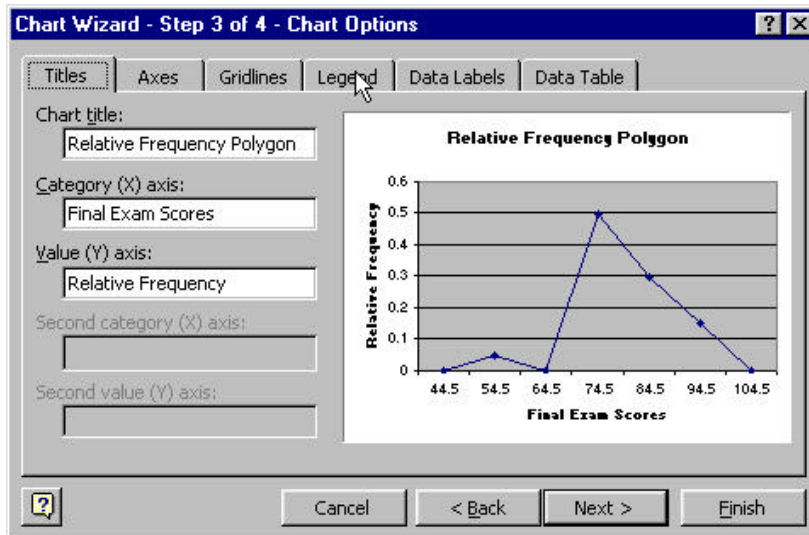


After clicking on the "Series" Tab (Circled), you may see a window like the one to the left if Excel has not automatically selected the appropriate data. Don't worry. Click the "Remove" button under the "Series" box until nothing is left. Next, click the "Add" button and continue to the next page of this Tip Sheet.

SAMLab Handout #5



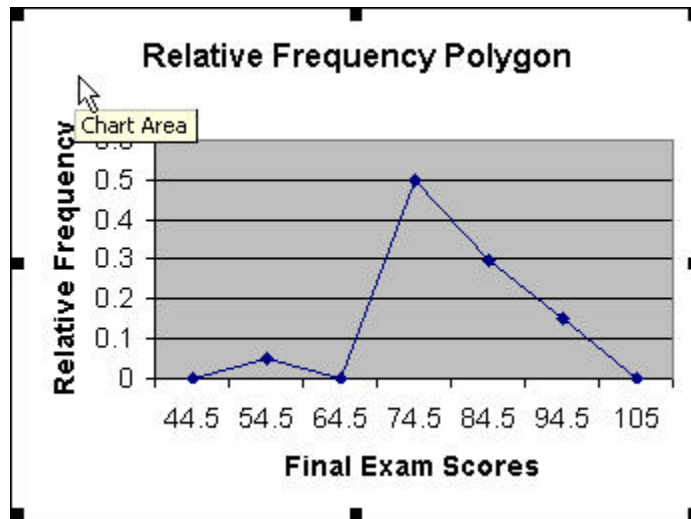
Enter a name for your new series in the “Name” field. Next, select the cells in the midpoint column (numbers only) for your “Category (X) axis labels:” and select the cells in the relative frequency column (numbers only) for your “Values.” Click Next >.



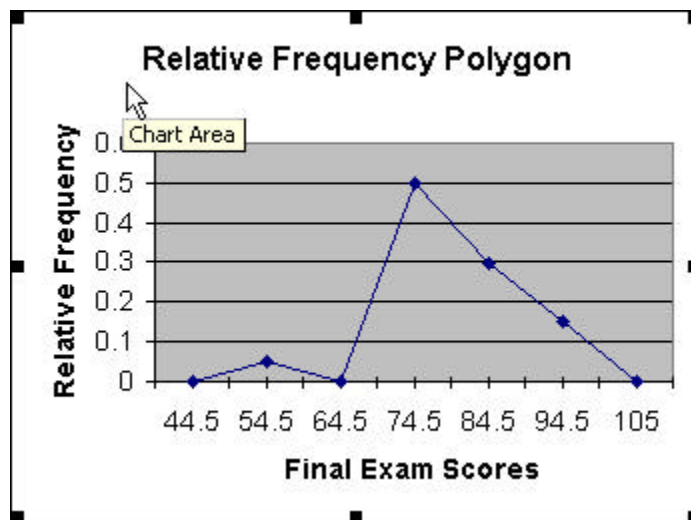
Enter appropriate titles just as we have done before. If you wish, you can also remove the legend (as shown) by unchecking the “Show Legend” box under the “Legend” tab. Once you’ve labeled your titles, you can explore other options or click Next >.

SAMLab Handout #5

As before, you'll see a window (not shown) asking whether you'd like the chart as a new sheet or as an object in the current sheet. Decide which option you'd like and click Finish. You should have a chart like the one below.



To make your x-axis easier to read, right click it and select "Format axis" from the menu (see [Tip Sheet #4](#) for an example). Just like in the previous tip sheet check the box next to "None" in the "Major tick mark type" box and check the box next to "Cross" in the "Minor tick mark type" box. Your graph should then look like the one below, which is our final product.



Notes

¹One way to try to make Excel automatically select the data you want is to highlight it before inserting your chart. This may not work, however, when you have many data on one spreadsheet. Also, it's a good exercise to select your data from the spreadsheet because it makes you aware of what you actually want to display.

²To illustrate why it can be useful to be able to see both the data and the chart, try changing the value of one of the cells containing your data and see what happens on the chart.

³These extra values are added to both columns so that the ends of the relative frequency polygon will "attach" to the x-axis, thus making a technically correct polygon.